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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,619	04/30/2001	Ladislav R. Pust	S01.12-0721	2604

7590 04/07/2004

Westman Champlin & Kelly  
900 Second Avenue South  
Suite 1600 International Centre  
Minneapolis, MN 55402-3319

EXAMINER
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MILLER, BRIAN E

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 04/07/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/845,619

Applicant(s)

PUST ET AL.

Examiner

Brian E. Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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Claims 1-19 are pending.

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 112***

2. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. All the independent claims, i.e., 1, 13, 19, contain language, i.e., “a combination of a Young’s Modulus...with magnetic media at high temperatures” is indefinite, such that the metes and bounds of the claims cannot be readily ascertained. It is not readily apparent what “combination” of the recited components would produce the claimed result, i.e., “pulls the transducer back away from the magnetic media to avoid contact with magnetic media at high temperatures.” Furthermore, it is not readily apparent what constitutes a *high* temperature, since “high” is a relative term.

3. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a limited amount of materials and thicknesses (see for example, Table 1), does not reasonably provide enablement for an unlimited combination of materials and thicknesses as the claim language sets forth. The specification does not enable any person skilled in the art to which it pertains, without undue experimentation, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

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Furthermore, it is unclear as to what temperature would encompass “high” and how far can such a “combination” pull the transducer back away from the magnetic media to be effective?

***Claim Rejections - 35 USC § 102***

4. Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Koshikawa et al (US 5,898,542). In so far as the claims are definite and understood, Koshikawa et al discloses a MR head for a magnetic disk drive (see FIG. 8), the head (referring to FIG. 5) including: a substrate 1 made of a material (AlTiC) with a thermal expansion rate CTE1 (7.9); a transducer (at least including elements 7-9) bonded to the substrate (through insulate layer 4) composed of materials, e.g., Cu, NiFe, with a thermal expansion rate CTE2 (Cu-16.5, NiFe-12.2) that is greater than CTE1 (7.9); a first restraint layer 5 that has a bond to a side of the transducer and is formed of a material (SiO<sub>2</sub>) having a thermal expansion rate CTE3 (1.0) that is less than CTE1 (7.9). See also col. 1, lines 35-51 for the description of the head, and col. 2, lines 51-57 for the use of materials. With the above construction, it is considered that combination of the restraint layer(s) and transducer bonded together to have a combined expansion rate that is substantially matched with CTE1 (re claims 2, 5); wherein the first restraint layer has dimensions and material properties that are selected to limit protrusion of the transducer beyond the substrate over an operating temperature range (see col. 5, lines 13-21) (re claim 3); a second restraint layer 4 that has a bond to a second one of the sides of the transducer, and that is formed of a material (SiO<sub>2</sub>) has a thermal expansion rate CTE4 (1.0) that is less than CTE1 (7.9) (re claim 4); a third layer 9 that has a bond to the second restraint layer (re claim 6); wherein a bonding film 7 is between the second restraint layer 4 and the third layer 9 (re claim 7); wherein the first constraint layer has a

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width that is substantially the width of the transducer and substrate (see FIG. 6(b)) (re claims 8-9); substrate has a CTE between 7-8.3, i.e., 7.9 (re claim 10); the transducer comprises metals with thermal expansion rates in the range of 12 to 17 (NiFe-12.2) (re claim 11); the first constraint layer comprises material with a thermal expansion rate of about 1.0-4.3 (SiO<sub>2</sub>-1.0) (re claim 12).

With respect to claims 13-17, the above structure is considered to encompass the method steps as claimed. Claim 18 is considered to also be encompassed by the above structure since the first restraint layer 4 is a thin film and deposited on another thin film, i.e., 8 (NiFe).

With respect to the newly added language to the independent claims, e.g., "a combination of a Young's Modulus...with magnetic media at high temperatures", and in view of the 112 paragraph 2 rejection, above, it is considered to be encompassed by Koshikawa et al.

5. Claims 1-11, 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Okai et al (US 5,687,045). In so far as the claims are definite and understood, Okai et al discloses a MR head for a magnetic disk drive (see FIG. 16), the head (referring to FIGs. 1-2) including: a substrate 11 made of a material (AlTiC) with a thermal expansion rate CTE1 (7.9); a transducer (at least including elements 13-15) bonded to the substrate (through insulate layer 12) composed of materials, e.g., Cu, NiFe, with a thermal expansion rate CTE2 (Cu-16.5, NiFe-12.2) that is greater than CTE1 (7.9); a first restraint layer 17 that has a bond to a side of the transducer and is formed of a material (Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>) having a thermal expansion rate CTE3 (taking a 60% weight of Al<sub>2</sub>O<sub>3</sub> at a CTE of 7.8 and 40% weight of SiO<sub>2</sub> with a CTE of 1.0 the overall CTE would be about 5.0) that is less than CTE1 (7.9). See also col. 13, line 19 to col. 14, line 15 for the description of the head. With the above construction, it is considered that combination of the

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restraint layer(s) and transducer bonded together to have a combined expansion rate that is substantially matched with CTE1 (re claims 2, 5); wherein the first restraint layer has dimensions and material properties that are selected to limit protrusion of the transducer beyond the substrate over an operating temperature range (see col. 14, lines 2-7) (re claim 3); a second restraint layer 12 that has a bond to a second one of the sides of the transducer, and that is formed of a material ( $\text{Al}_2\text{O}_3\text{-SiO}_2$ ) has a thermal expansion rate CTE4 (same as CTE3 as discussed above) that is less than CTE1 (7.9) (re claim 4); a third layer 14 that has a bond to the second restraint layer (re claim 6); wherein a bonding film 13 is between the second restraint layer 12 and the third layer 14 (re claim 7); wherein the first constraint layer has a width that is substantially the width of the transducer and substrate (see FIG. 1) (re claims 8-9); substrate has a CTE between 7-8.3, i.e., 7.9 (re claim 10); the transducer comprises metals with thermal expansion rates in the range of 12 to 17 (NiFe-12.2) (re claim 11).

With respect to claims 13-17, the above structure is considered to encompass the method steps as claimed. Claim 18 is considered to also be encompassed by the above structure since the first restraint layer 17 is a thin film and deposited on another thin film, i.e., 13 (NiFe).

With respect to the newly added language to the independent claims, e.g., “a combination of a Young’s Modulus...with magnetic media at high temperatures”, and in view of the 112 paragraph 2 rejection, above, it is considered to be encompassed by Okai et al.

### ***Response to Amendment***

6. Applicant's arguments filed 1/29/04 have been fully considered but they are not persuasive.

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A...With respect to the 112 paragraph (1) and (2) arguments, the Examiner respectfully disagrees with applicant and maintains the rejections. The applicant is required to “particularly point out and distinctly claim the subject matter which applicant regards as the invention” as required by 35 U.S.C. § 112 second paragraph, but has failed to do so in the Examiner’s opinion. It is noted that the supplied discussion on “thermal stress” was not directed to the subject matter of the instant invention. It appeared to be directed to “jet engines, rocket motors and nuclear reactors.”

B...Applicant asserts that neither Koshikawa et al or Okai et al teach “a combination of Young’s Modulus, a Poisson’s ratio and a thickness such that the first restraint layer pulls the transducer back away from magnetic media to avoid contact with magnetic media at high head temperatures.”

In response, the Examiner maintains that in so far as this language is definite and understood, this language is met by the applied references. Since the references teach a substrate with a thermal expansion rate CTE1, a transducer having a thermal expansion rate of CTE2 which is greater than CTE1, and a restraint layer that has a thermal expansion rate of CTE3 that is less than CTE1, at least inherently, since all of the thermal expansion rates have been met, the references meet the claim limitations. Furthermore, the aforementioned limitation is considered to encompass an “intended use” recitation, such that it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claim apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ2d 1647 (1987).

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (703) 308-2850. The examiner can normally be reached on M-TH 7:15am-4:45pm (and every other friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.



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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Brian E. Miller", is positioned above the printed name.

**Brian E. Miller**  
**Primary Examiner**  
**Art Unit 2652**

Bem  
4/6/04